FACTSHEET
ANIMAL SCIENCE

ORDER NO.07-031
JUNE 2007
AGDEX 400/20

Ontario Ministry of Agriculture, Food and Rural Affairs

GIVING MEDICATION TO ANIMALS BY INJECTION

A. Godkin

INTRODUCTION

For many medicines and vaccines, injection is the best method of administration to an animal. Although the purpose of an injection is to benefit the animal, if proper technique is not used an injection has the potential to do harm. Poorly injected products may not be well absorbed and may not work. The injection could create drug residues, scar tissue, and/or abscesses that could cause the animal pain and suffering.

Your veterinarian can instruct you on fine tuning your injection techniques. This Factsheet provides a basic understanding of good procedures.

READ THE LABEL

Before using any product read the label

Pharmaceutical manufacturers provide safe products that will effectively treat a health problem, provided they are stored and used according to label directions. Prior to licensing a product, research is conducted to determine the best injection site, route and dosage for the treatment of a particular condition in a particular species and class of animal. This research is required for product licensure and provides the information for the label instructions. Drug products approved by Health Canada have Drug Identification Numbers (DINs) on the label showing that their use is approved in Canada. Only use products with DINs, unless your veterinarian advises differently.

An approved medicine will have a label displaying:

- the **product name**, the **active ingredient** and the **concentration** of the drug
- **product usage** directions
- **instructions for preparation** if needed
- the **formulation** of the product, describing the contents of the package
- **warning** statements describing hazards to human health and safety associated with handling the product and any restrictions on use
- the **withdrawal time,** the recommended time between the last treatment and the slaughter of the animal for food (or sale of the milk)
- **precautions** statements that will alert you to **storage** and **safe handling** requirements to maintain product stability and potency
- **indications** statements describing the species, class of livestock and the disease conditions for which the product is to be used
- **dosage and administration** statements describing the directions for use (e.g. how much, how often and for how long), the route of administration (e.g. IM, SQ, IV) and the intervals between treatments
- **cautions and contraindications** statements warning about hazards to animal health and safety (e.g. potential adverse reactions)
- **restricted uses**, which are limitations for the use of the product (for example "Do not use in lactating cattle")
- **directions to read package insert for more detailed directions**, which alerts you to take special care when using the product, or to the need to ask your veterinarian for more complete instructions
- the **expiry date**, which is the date past which the unopened product should not be used
- the **lot number**, which is a record of the manufacturer's production batch

EXTRA-LABEL USE OF DRUGS (ELUD)

Products used in **any manner** other than that recommended on the label are used in an extra-label (ELUD) manner. ELUD treatments can **ONLY** be done on the specific, written recommendation of your veterinarian, who will provide additional information needed to use a product in the manner they are recommending.

Label withdrawal times may not be correct or the product may not work as expected if label directions are not followed.

GENERAL PRINCIPLES FOR ADMINISTERING INJECTIONS

- Follow your veterinarian's directions for all injections.
- Pick an area of clean, dry skin for injection.

Preparing the Product

- Clean the bottle tops with a small amount of alcohol on a cotton swab or ball.
- Only enter the bottle with a sterile needle. Never re-enter a bottle of injectable medicine with a needle that has already been used for an animal injection.
- Remove all needles from bottles prior to storage.
- Store all products according the label directions.

Using Clean Equipment

- Wash your hands before and after handling medicinal products.
- Use disposable syringes whenever possible.
- If using reusable syringes, use only hot water (no soap or detergent) to rinse them before using modified live virus vaccines. Chemicals may destroy the live virus and inactivate the vaccine.
- Use hot water and mild disinfectants to clean syringes for other types of injectable products.
- After cleaning, sterilize reusable syringes before reusing by autoclaving (high temperature, pressurized steam cleaning technique).

Choosing Needles

- Use a sterile needle for each animal.
- Use single use disposable needles whenever possible. Reusing needles can transmit infections (such as Bovine Leukemia Virus) from animal to animal.
- Occasionally the same needle may be used for multiple injections (i.e., when giving many doses in a short period of time, such as with injectable worming products in feedlot cattle). If doing so change the needle frequently (i.e. every 10 animals).
- Choose the smallest needle size (diameter) that is reasonable to use for the product type and volume to be injected. This will minimize tissue damage and reduce leakage of the product from the injection site.
- Choose needles of the correct length for the type of injection you are giving and suitable for the size of animal being injected. Shorter needles (1.0 or 0.5 in.) can be used for subcutaneous injections; longer ones (1.5 in.) for intra-muscular injections. Smaller animals (i.e. calves) have smaller muscle masses and should be injected with needles of appropriate length to prevent injury to nerves and other tissues.

Restraining Animals

- Good animal restraint prevents injury to you and the animal. Good restraint prevents needles from breaking off at the hub when the animal moves suddenly, prevents accidental self-injection and allows good visualization of injection sites.

Volume of Product to Inject

- Inject quantities no greater than that recommended on the label, at one body site.
- Split large volumes into smaller amounts and inject at different locations. Generally for IM injections, inject no more than 10 mL per site. For SQ injections, inject no more than 20 mL per site.

Mixing Products

- Do not combine vaccines or products in the same bottle or syringe unless the label clearly states to do so. Mixing can adversely affect the products by changing the pH, the chemical composition, or by causing components of the drug to precipitate out of solution.
- Shake or agitate products as directed on the label prior to use to ensure that they stay in proper suspension in the bottle.

INJECTION TECHNIQUES

Intramuscular Injections

- Choose muscle tissue of lesser value to consumers for IM injections. In cattle, for example, IM injections where possible, are often given in the neck area instead of the hip.

2008-01437/

- Draw air into the syringe and inject the same volume of air into the bottle as the volume you plan to take out of the bottle to equalize the pressure. Failure to do so will make it difficult to withdraw the contents of the vial or bottle.

- After filling the syringe with the product to be injected, point the syringe upwards and tap the barrel with your finger to make air bubbles move upwards into the syringe tip. Slowly and carefully push the plunger to eject the air bubbles from the syringe before injecting the product.

- Give IM injections deep into a muscle. Use a needle long enough to penetrate skin, subcutaneous tissue and fat to reach the muscle. The needle should enter the skin perpendicular to the skin surface.

- Insert the needle into the animal, and then attach the syringe to the needle. Check that the needle is not in a blood vessel by pulling back on the plunger and observing for blood flow in the tip of the syringe. If blood appears, remove the needle and put it in a different location at least one inch away from the original injection site.

Subcutaneous Injections

- Generally, you can choose the subcutaneous (SQ) route when given a choice of either the intramuscular (IM) or SQ on the product label.

- Give SQ injections half way up the neck in front of the shoulder, or over the ribs well behind the shoulder.

- Use a 0.5 to 1 inch long needle.

- To give SQ injections for cattle, lift a fold of skin to make a skin "tent". Insert the needle through one side of the tent at an angle of 30 to 45 degrees relative to the surface of the body. For swine, it won't be possible to make a "tent", so slide the needle under the skin at an angle of about 30 degrees from parallel to the skin surface and inject.

Intravenous Injections

- For IV injections, get advice and training from your veterinarian, as this is a specialized technique that requires expertise and practice.

Multiple Injections

- Choose different injection sites on the body (e.g. opposite sides of the neck) when repeating treatments over a number of days.

- Place repeat injections at least 4 inches, or one hand-width from a previous injection site.

CONSEQUENCES OF POOR INJECTION TECHNIQUES

- **Treatment failure**, if product absorption is delayed or blocked.

- **Drug residues in meat or milk** if the drug can not be absorbed and metabolized in a timely manner.

- **Animal suffering and incapacitation** due to nerve damage and swelling from tissue reactions.

- **Excessive trim** at slaughter due to abscess, scarring, broken needles.

- **Shock or death** of the animal being treated, if medications unintentionally enter the bloodstream.

- **Accidental human injection.**

RECORDS OF TREATMENT

All treatments given to food animals should be permanently recorded to ensure withdrawal time requirements are met and to improve treatment decisions and success.

1. Keep permanent written records of treatments administered to individuals or groups of animals.

2. Record the animal's identification, date(s) the treatment was given, product name, amount given, the route, site and time when meat or milk will be ready for sale.

3. Have your veterinarian leave legible, written instructions for use when medications are being dispensed, especially if they are recommending the use of a product in a manner different than the label directions.

4. Save the box tops or labels of products used. This provides a list of product names, lot numbers and expiry dates. Record the date of use on the box top or label to provide a permanent record of when a particular product was used.

5. Keep a current package insert for products commonly used in a file or drawer for reference.

This factsheet was authored by **Dr. Ann Godkin**, Veterinarian – Disease Prevention, Dairy and Beef Cattle, OMAFRA, Fergus.

Agricultural Information Contact Centre
1-877-424-1300
ag.info.omafra@ontario.ca

www.ontario.ca/omafra

POD
ISSN 1198-712X
Également disponible en français
(commande n° 07-032)

Ontario